

CLAIMS

WHAT IS CLAIMED IS:

1. A method comprising:

5 aligning a drilling device at a first intersection of a first scribe line and a second scribe line coupled to a first surface of a substrate; and

10 drilling through said substrate at said first intersection with said drilling device from said first surface to a second surface of said substrate to form an alignment mark.

2. The method of Claim 1 further comprising coupling a wafer support to said first surface of said substrate.

15 3. The method of Claim 2 further comprising optically recognizing said first intersection through said wafer support.

20 4. The method of Claim 2 wherein said wafer support is sufficiently transparent to allow said first intersection to be optically recognized through said wafer support.

25 5. The method of Claim 2 further comprising protecting said first surface of said substrate with said wafer support.

30 6. The method of Claim 5 wherein said drilling generate contaminants, said wafer support protecting said first surface of said substrate from said contaminants.

35 7. The method of Claim 1 further comprising aligning a saw with said first scribe line using said alignment mark.

8. The method of Claim 7 further comprising shining light of an angle to said second surface of said substrate to enhance recognition of said alignment mark.

5 9. The method of Claim 7 wherein said saw is selected from the group consisting of a mechanical saw, a laser saw, and a high-pressure water saw.

10 10. The method of Claim 7 further comprising cutting said substrate from said second surface with said saw.

11 11. The method of Claim 10 wherein said substrate is cut along said first scribe line.

15 12. The method of Claim 10 wherein said cutting singulates electronic components of said substrate.

20 13. The method of Claim 12 wherein said electronic components are selected from the group consisting of integrated circuits, micromachine chips, and image sensor chips.

25 14. A method comprising:
coupling a front-side surface of a wafer to an interior surface of a wafer support;
optically recognizing a scribe grid coupled to said front-side surface of said wafer through said wafer support;
30 aligning a drilling device directly to said scribe grid; and
drilling through said wafer with said drilling device from said front-side surface to a back-side surface of said wafer to form a back-side alignment mark.

35 15. The method of Claim 14 further comprising protecting said front-side surface of said wafer with said wafer support during said drilling.

16. The method of Claim 14 further comprising aligning a saw with said scribe grid using said alignment mark.

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17. The method of Claim 16 further comprising cutting said wafer from said back-side surface with said saw.

10 18. The method of Claim 17 further comprising protecting said front-side surface of said wafer with said wafer support during said cutting.

15 19. The method of Claim 18 further comprising washing said wafer to remove contaminants generated during said cutting.

20 20. A method comprising:

coupling a front-side surface of a wafer to a wafer support, a first scribe line and a second scribe line being coupled to said front-side surface;

optically recognizing an intersection of said first scribe line and said second scribe line through said wafer support;

25 aligning a drilling device at said intersection; and drilling through said wafer support and through said wafer at said intersection with said drilling device to form an alignment mark on a back-side surface of said wafer.

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21. A method comprising:

coupling a front-side surface of a wafer to a wafer support, a first scribe line and a second scribe line being coupled to said front-side surface;

35 optically recognizing an intersection of said first scribe line and said second scribe line through said wafer support;

aligning a drilling device at said intersection;

drilling through said wafer from said front-side surface to a back-side surface of said wafer at said intersection with said drilling device to form an alignment mark on said back-side surface of said wafer;

5 aligning a saw with said first scribe line using
said alignment mark; and

cutting said wafer from said back-side surface with said saw along said first scribe line, wherein said wafer support protects said front-side surface during said

10 cutting.

